GEOG 2500 – Introduction to Soils and Vegetation
Department of Geography, York University
Fall, 2018

Lectures: Tuesdays at 9:30 to 11:30 AM – Room: S105 Ross Building
Labs: Fridays from 10:30AM to 12:30PM. – Room: Accolade West 008

Course Director:
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Lab Demonstrator:
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Course Description:
This course explores the structure, function, and dynamic nature of vegetation and soil systems, and the interrelationship between the two. We will examine the role of climate, topography, and time in structuring terrestrial ecosystems at different spatial scales (from local to global), and the role humans play in disrupting ecosystem processes. Methods of field sampling and soil analysis will be emphasized in labs.

Critical Learning Outcomes:
- Students will learn about the formation and development of soils, and their physical, chemical, and biological properties, in order to understand how environmental conditions affect the ability of soils to perform ecosystem services
- Students will learn about the relationship between plants and environmental factors, in order to explain patterns in the distribution of vegetation
- Students will learn how soils and plants interact to control the cycling of water, carbon, and nutrients in terrestrial ecosystems, in order to apply this learning towards a more sustainable future.

Course website:
GEOG2500 will have an active Moodle environment that will be your primary hub for all information related to the course, including lecture and lab materials, discussion boards, and readings required for classes. Please check Moodle regularly for the most up to date course information and news. In particular, I strongly encourage you to use the discussion board to ask/answer questions of your peers, establish study groups and discuss your favorite topics related to soils and vegetation.

Course materials:
Textbook: Chapin FS, Matson PA, and Vitousek PM. 2011. "Principles of terrestrial ecosystem ecology," Springer, New York. (available to download for free as an online ebook from the York Library: https://www.library.yorku.ca/find/Record/2617105).
Supplemental readings: Available on Moodle.
Lab Manual: Available on Moodle.

Marks Breakdown:

Midterm	20%
Final Exam	30%
Lab Assignments	15%
Presentation	15%
Lab Report	20%

Late assignments will receive a deduction of 10% per day (including weekends), unless a doctor's note is provided. The midterm test will take place during class, and is tentatively scheduled for Oct. 23. The final exam will be held during the University exam period in December (date TBD). It is the student's responsibility to be available to take examinations in the scheduled times. Accommodation will only be made in the case of a serious emergency or illness, and documentation must be provided. Students missing the midterm for documented reasons will need to coordinate with me to find a suitable time for a make-up test.

Attendance and Participation:
Labs are mandatory, absence will result in difficulty completing lab assignments. I will provide lecture notes on Moodle, but these will be skeletal, and will be supplemented in lecture. Students are responsible for getting their own notes when they are absent from class, and ensuring they do not fall behind.

Tentative schedule and topics for the course (subject to modification):
Lectures:

Date	Lecture Topic	Required Readings
Sept. 11	Introduction to Soils and Vegetation	
Sept. 18	Soil Formation	Chapin et al. 2002 "Principles of Terrestrial Ecosystem Ecology" Chapter 3, Geology and Soils
Sept. 25	Vegetation	Chapin et al. 2002 "Principles of Terrestrial Ecosystem Ecology" Chapter 13, Temporal Dynamics
Oct. 2	Global Biomes	
Oct. 9	Reading Week	
Oct. 16	Hydrological cycling	Chapin et al. 2002 "Principles of Terrestrial Ecosystem Ecology" Chapter 4, Terrestrial Water and Energy Balance
Oct. 23	**MIDTERM**	

Oct. 30	Introduction to Soil Chemistry	
Nov. 6	Carbon Cycling	
Nov. 13	Nutrient Cycling	Chapin et al. 2002 "Principles of Terrestrial Ecosystem Ecology" Chapter 9, Terrestrial Nutrient Cycling
Nov. 20	Soil Organic Matter/Terroir	FAO Soils Bulletin, "The Importance of Soil Organic Matter," Chapters 1 and 2
Nov. 27	Permafrost	https://nsidc.org/cryosphere/frozenground/index.html
Dec. 4	Final Exam Review	
Dec.TBD	**FINAL EXAM**	

Labs:
You are responsible for knowing when you have a lab, and where you are expected to be on that day, as not all labs will take place in the assigned lab room. Not reading the schedule will is an inadequate excuse for missing critical material. For days where you will be conducting field sampling, please meet in the assigned lab room (Accolade West 008) before going out, in order to collect equipment. Outdoor labs (Oct 21 & Oct 5) will take place rain or shine, so come dressed appropriately for the weather. Labs on Oct 19 and Oct 26 will take place in the Department of Geography's Biogeochemistry Lab in Lumbers Building Room 105. If you have never been there before, please leave extra time to find the room.

Sept. 7	No lab
Sept. 14	Tour of the GESSAY balcony garden (meet in ACW 008 first)
Sept. 21	Lab 1: Introduction to soil sampling in the field (Boyer Woodlot)
Sept. 28	Soil Classification Tutorial Required Reading: Paper, Hartemink (2015) *Read before coming to class
Oct. 5	Lab 2: Vegetation Survey (Boyer Woodlot) **DUE: Assignment #1 – Field Characterization of Soils in the Boyer Woodlot**
Oct. 12	Reading Week
Oct. 19	Lab 3: Lab analysis of soils (in Lumbers Room 105) **DUE: Assignment #2 – Boyer Woodlot Vegetation Survey**
Oct. 26	Lab 4: Lab analysis of soils (in Lumbers Room 105)
Nov. 2	Balancing Redox Reactions **Assignment #3 – Redox Reactions – DUE at the end of lab.**
Nov. 9	Tutorial: How to write a science paper
Nov. 16	Student presentations*
Nov. 23	Student presentations*
Nov. 30	Student presentations* **DUE: Lab Report**

*I encourage you to be creative in choosing your presentation topic. The only stipulations are that it must relate directly to concepts covered in class, and that the topic is likely to be well represented in the peer-reviewed scientific literature. To ensure your topics meet these criteria,

you MUST have your topic pre-approved by your TA on or before Sept. 28! You will also need to sign up for a presentation slot with your TA by Sept. 28.

Grade Breakdown:
90%-100: A+
80-89: A
75-79: B+
70-74: B
65-69: C+
60-64: C
55-59: D+
50-54: D
40-49: E
0-39: F

Plagiarism:
The University policy on academic honesty and plagiarism can be found at the following link, which I expect you to review.
http://secretariat-policies.info.yorku.ca/policies/academic-honesty-senate-policy-on/
As well, please see the online tutorial at: http://www.yorku.ca/tutorial/academic_integrity/

Resources:
Counselling and Disability Services
N110 Bennett Centre for Student Services
416-736-5297
http://cds.info.yorku.ca/

York provides psychological and academic support services to all students, including personal counselling, crisis response and support, assistance in the development of learning skills, and specialized support for students with learning disabilities

Geographic Resource Centre (GRC)
S403 Ross Building

The GRC is a quiet research and study facility for students in the Dept. of Geography. Computers are available for student use, including internet access, access to digital course material, and MS Office software. Various textbooks are also available should students want to supplement their learning in the course.

Social Media

The Department of Geography at York University maintains an active social media presence to communicate with students:
Facebook: https://www.facebook.com/YorkUGeography/
Twitter: https://twitter.com/YorkGeography